

## MISCELLANEOUS NOTES

1. RECORD OF A LEOPARD *PANTHERA PARDUS* IN PULICAT LAKE

Pulicat Lake (13° 24'-13° 47' N; 80° 03' to 80° 18' E) is the second largest (461 sq. km) brackish water lagoon in India, sprawling across the states of Andhra Pradesh and Tamil Nadu, and is bordered by villages and forested areas.

A full grown male leopard (length 152 cm; wt 52 kg) was found dead in the mudflats of Pulicat Lake in June 2001. The leopard was picked up by fishermen while fishing in the area between Sriharikota and Venadu Islands and handed over to the Forest Department.

Sriharikota has a good population of feral cattle, Wild Boar and Chital in the remnant patch of tropical dry evergreen

forest of the island. The leopard could have possibly come from the nearby forest areas, however, there have been no records of leopard in Sriharikota over the past 30 years.

February 11, 2002

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2. OCCURRENCE OF SHORT-NOSED FRUIT BAT *CYNOPTERUS SPHINX* (VAHL) IN VILLAGES OF TAMIL NADU STATE, INDIA

The diversity of bat species in India is rich, about a hundred species including 12 species of fruit bats (Mistry 1995). Nevertheless, the population status, distribution, and ecology of most Indian bats are not well known (Bates *et al.* 1994, Bates and Harrison 1997). We carried out surveys between January 23 and September 30, 1998 in villages, such as Mullayampatnam, Pandanallur, Tirunagiri, Pulicat and Vedanthangal in the districts of Nagai, Thiruvallur, and Kanchipuram to determine the occurrence of the Short-nosed Fruit Bat *Cynopterus sphinx*. Mist nets were used to capture the bats and to each bat captured, a wing band was attached. Data was recorded on the location, habitat type, date, time, sex, age, and body measurements. The density of Short-nosed Fruit Bats was calculated only at Tirunagiri (Nagai District) by counting the number of bats on some trees and multiplying this by the total number of occupied trees (Mutere 1980). Nocturnal observations were made in moonlight and dim red lights (Barclay and Bell 1988) and the foraging activity data were recorded using all-occurrences sampling method (Altmann 1974).

The Short-nosed Fruit Bat occurred in all the surveyed sites in habitats such as plantation, rice field and forest (Table 1). The average number of bats caught and released per hour ranged from 1 to 4.5, indicating that they were common. In April 1998, the relative density of the Short-nosed Fruit Bat was estimated at Tirunagiri where a total of 216 palm trees were found in 1 sq. km. The average density of bats occupying 10% of the available trees was estimated to be 74 /sq. km. A total of 55 bats (24 males and 31 females) were captured at the same site between August and September 1998. Females with young were caught during March and

April (n=9) and September (n=5) indicating two distinct breeding seasons. All captured bats were safely released within five minutes with no mortality.

The bats roosted mainly on the Palmyra palm *Borassus flabellifer*; each tree had 1-3 tents with 5-10 individuals in each tent. The bats modified the leaves by chewing the veins and leaf blade from below to make tents, also reported by Balasingh *et al.* (1993). The bats roosted in palm trees with dense lower leaves, which the local farmers periodically removed to extract toddy, causing occasional disturbance to their roost. No bats were seen roosting in buildings and houses.

There was no difference in the body weight, body length, tail, hindfoot, ear, forearm and wingspan measurements between the two sexes (Table 2). The data from our study is close to an earlier report by Bates and Harrison (1997).

**Table 1:** Average number of Short-nosed Fruit Bats captured and released per hour during mist-net surveys

Name of village/town and district	Habitat type	Average Number of bats/hour	Standard deviation
Mullayampatnam (Nagai)	Plantation	3.43	-
Pandanallur (Nagai)	Rice field	1.00	-
Tirunagiri (Nagai)	Rice field	3.16	1.29
Pulicat (Thiruvallur)	Plantation	1.98	2.39
Pulicat (Thiruvallur)	Forest	1.10	0.14
Vedanthangal (Kanchipuram)	Rice field	4.50	4.62
Total average		2.83	2.56

**Table 2:** Body measurements of the captured Short-nosed Fruit Bats

	Weight* (g)	Head and Body (mm)	Tail (mm)	Hind foot (mm)	Ear (mm)	Forearm (mm)	Wing span (mm)
Female (31)	51.4 ±5.1	85.3 ±12.0	16.3 ±1.9	16.6 ±1.8	19.3 ±1.5	70.5 ±1.8	463.7 ±15.3
Male (24)	51.8 ±4.2	89.5 ±12.3	15.4 ±2.3	16.4 ±1.7	19.5 ±2.0	70.0 ±2.0	467.7 ±11.3
Mean	51.6 ±4.7	87.1 ±12.2	15.9 ±2.1	16.5 ±1.8	19.3 ±1.8	70.3 ±1.9	465.4 ±13.7

Short-nosed Fruit Bats produce high pitched vocalization audible to the human ear and can be identified easily while feeding and flying around trees. They fed on 10 plant species, *Madhuca indica*, *Ficus benghalensis*, *Ficus religiosa*, *Musa paradisiaca*, *Polyalthia longifolia*, *Calophyllum polyanthum*, *Syzygium cumini*, *Bombax ceiba*, *Psidium guajava*, and *Gardenia jasminoides*. They fed mainly on fruit and occasionally on nectar and leaves. Banded bats were observed to carry fruit 100-2000 m away from the foraging sites to their roosts.

Fruit bats are excellent seed dispersers, pollinators and indicators of habitat diversity, but the Indian Wildlife (Protection) Act, 1972 categorises all species of fruit bats as vermin. No quantitative data exists on the extent of damage caused to cash crops in south India, either by the Short-nosed or other species of fruit bats. In Tamil Nadu and the neighbouring state of Kerala, Elephant *Elephas maximus* and

Wild Boar *Sus scrofa* were mainly reported to cause damage to agricultural crops, along with Hanuman Langur *Semnopithecus entellus*, Bonnet Macaque *Macaca radiata*, Porcupine *Hystrix indica*, Gaur *Bos frontalis*, Sambar *Cervus unicolor*, Barking Deer *Muntiacus muntjak*, Mouse Deer *Moschiola meminna*, Black-naped Hare *Lepus nigricollis*, Malabar Giant Squirrel *Ratufa indica* and Indian Peafowl *Pavo cristatus* (Veeramani and Jayson 1995). Since not much is known on the extent of damage done to orchards by fruit bats, future studies should focus on this aspect.

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## REFERENCES

- ALTMANN, J. (1974): Observational study of behaviour: sampling methods. *Behaviour* 49: 227-265.
- BALASINGH, J., S. ISAAC & R. SUBBARAJ (1993): Tree-roosting by the frugivorous bat *Cynopterus sphinx* (Vahl 1797) in southern India. *Curr. Sci.* 65: 418.
- BARCLAY, R.M.R. & G.P. BELL (1988): Marking and observational techniques. Pp. 59-76. *In*: Ecological and Behavioral Methods for the Study of Bats. (Ed: Kunz, T.H.). Smithsonian Institution Press, Washington, D.C.
- BATES, P.J.J. & D.L. HARRISON (1997): Bats of the Indian subcontinent. Harrison Zoological Museum Publication, Kent.
- BATES, P.J.J., D.L. HARRISON & M. MUNI (1994): The bats of western India revisited, part 1. *J. Bombay Nat. Hist. Soc.* 91: 1-15.
- MISTRY, S. (1995): The Bats of India. *Bats* 13: 11-15.
- MUTERE, F.A. (1980): *Eidolon helvum* revisited. Pp. 145-150. *In*: Proceedings 5th Int. Bat Research Conference. (Eds: Wilson, D.E. & A.L. Gardner). Texas Tech. University Press, Lubbock.
- VEERAMANI, A. & E.A. JAYSON (1995): A survey of crop damage by wild animals in Kerala. *Indian Forester* 121: 949-953.

### 3. A NOTE ON DISTINGUISHING *GERBILLUS GLEADOWI* AND *GERBILLUS NANUS* BASED ON THEIR FOOTPRINTS IN THE THAR DESERT, INDIA

Tracking is one of the most effective methods for determining the preference, movement, home range and habitat use by small mammals (Sheppe 1965; Maybee 1998). It has been used successfully in wildlife and pest control (Sheppe 1965; Spaulding and Jackson 1984; Ratz 1997). Compared to live capture traps, tracking does not restrict the animal's movement, allows one to cover a larger area and is also less time and labour intensive (Sheppe 1965; van Apeldoorn *et al.* 1993; Maybee 1998). It does not involve handling of rodents, thereby reducing exposure to transmissible diseases (Drennan *et al.* 1998). Various methods like aluminium tracking plots, weather resistant tracking stations, sand, dirt and lime track

beds have been used for studying small mammals (Sheppe 1965; Spaulding and Jackson 1984; van Apeldoorn *et al.* 1993).

There is no information on species level identification from tracks and signs for any of the small mammals in the Indian subcontinent. Here we describe the distinguishing characteristics of footprints of two gerbil species, *Gerbillus gleadowi* and *G. nanus* for field identification. The characters were recorded from track plots. Compared to track stations, track plots allow easy movement of animals, are less expensive and easy to lay. Footprint identification was standardised to help in the study of habitat use by gerbils in the Thar desert, India.